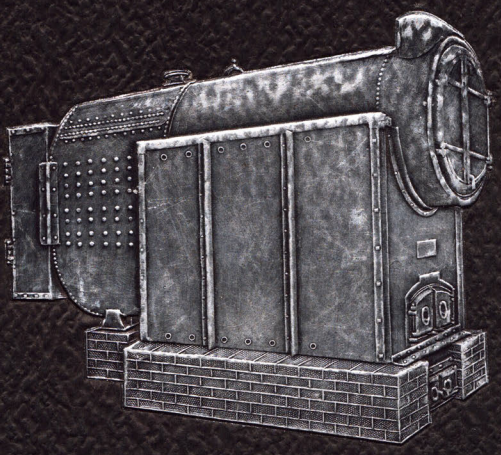
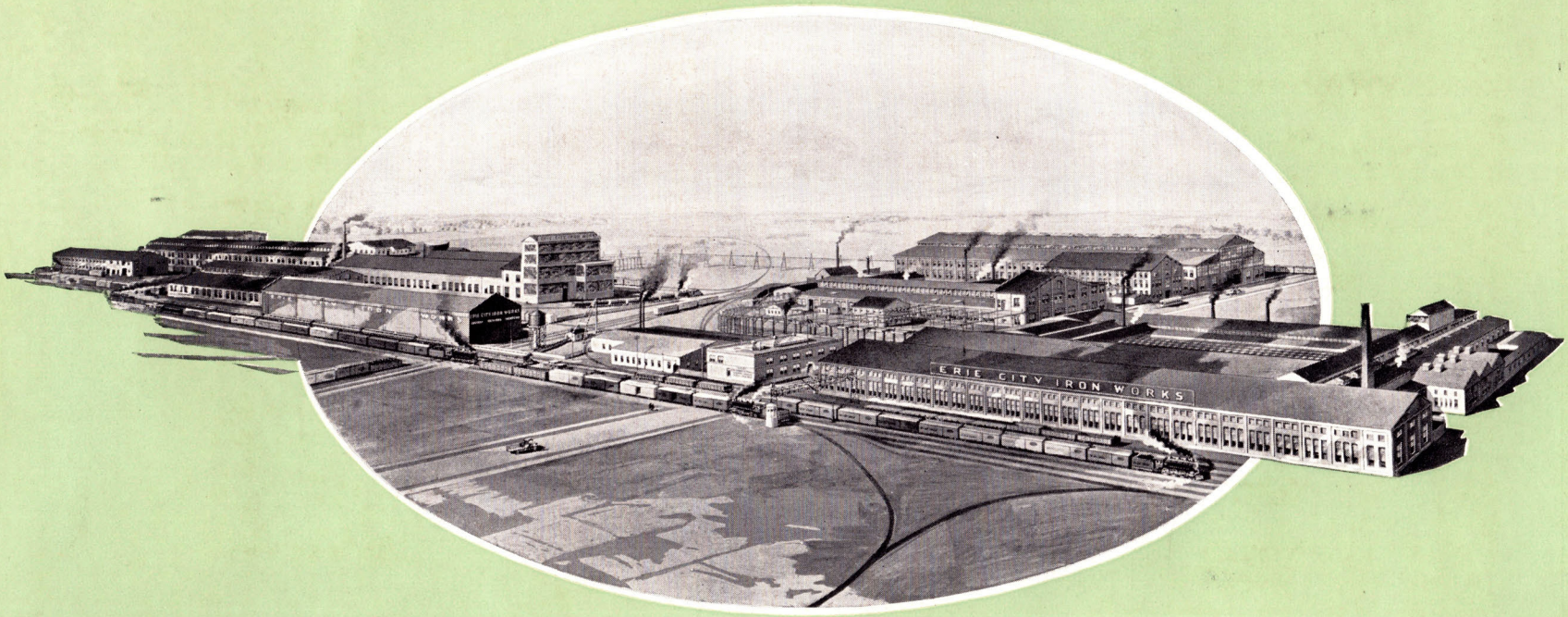
THE ECONOMIC BOILER



FOREWORD

THE NAME ECONOMIC AS APPLIED TO THE ERIE CITY SEMI-PORTABLE, SELF CONTAINED BOILER UNIT HAS BECOME SYNONYMOUS WITH THAT TYPE OF BOILER. ● THE NAME ECONOMIC HAS BEEN CONTINUALLY USED SINCE 1883 BY THE ERIE CITY IRON WORKS TO DESIGNATE THE COMBINATION, IN ONE COMPACT UNIT, OF RETURN TUBULAR BOILER, FURNACE AND BRICKWORK.

C. B. ACHESON
District Sales Agent
122 South Michigan Avenue
CHICAGO, ILL.



HOME OF THE ERIE CITY IRON WORKS, ERIE, PENNA. COVERING 35 ACRES.
IT IS ONE OF THE LARGEST AND MOST MODERN BOILER PLANTS IN THE WORLD.
THOUSANDS OF ECONOMICS MADE IN THIS PLANT ARE IN WORLD WIDE SERVICE.

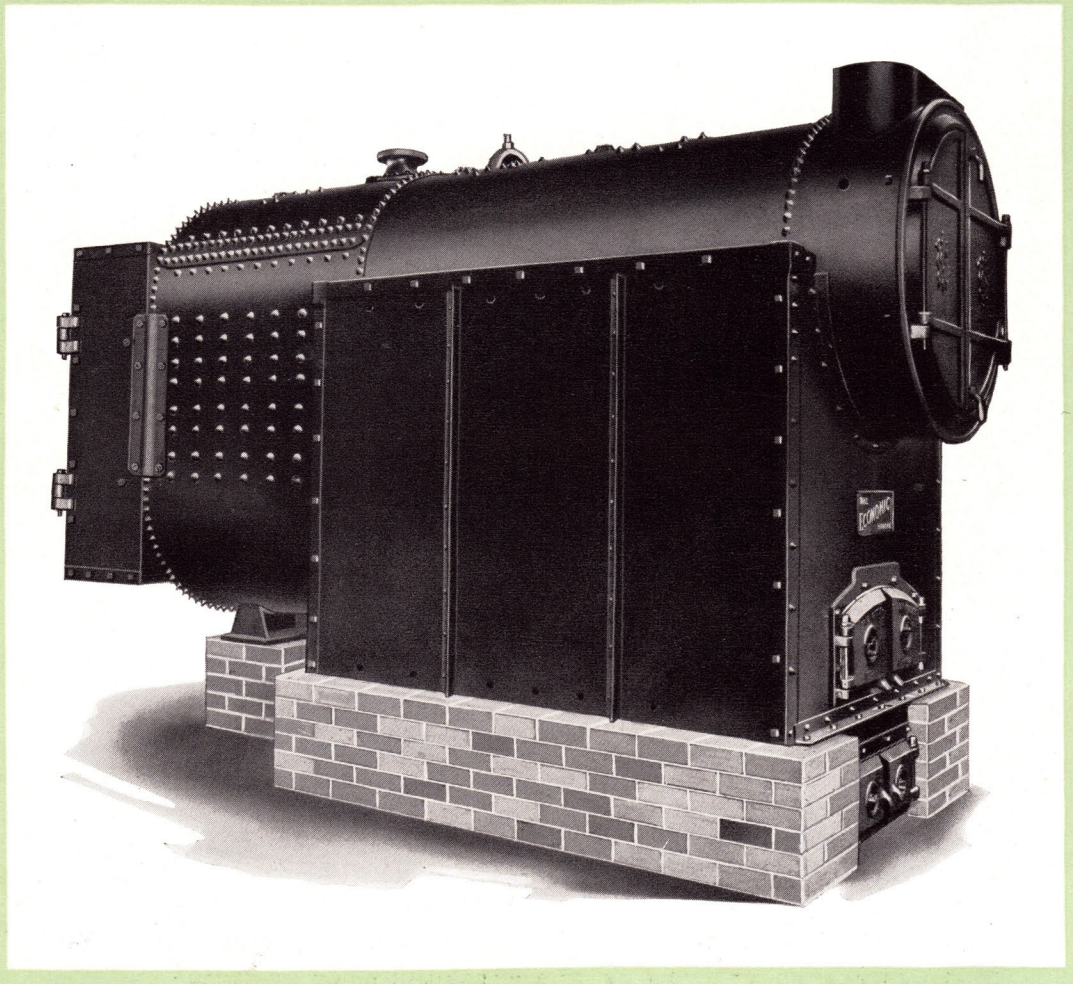
THE ERIE CITY ECONOMIC BOILER

***for* Hand, Stoker, Oil, Gas or Special Firing. Built in Units 20-250 h.p. for 100, 125 or 150 pounds w.p. Higher pressures on special order.**

The Economic IS BUILT IN STRICT CONFORMITY TO THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS' BOILER CODE FOR HIGH PRESSURE BOILERS. EACH BOILER IS TESTED AT 50% GREATER PRESSURE THAN DESIGNED WORKING PRESSURE. A CERTIFICATE COVERING THIS INSPECTION IS AVAILABLE AT ANY TIME.

ERIE CITY IRON WORKS

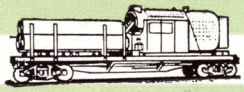
ERIE, PENNSYLVANIA



THE ERIE CITY ECONOMIC BOILER

THE Erie City Economic has brought to the smaller steam user a boiler especially adapted to his needs. Boiler, refractory and furnace are combined in one efficient and compact unit which can be shipped from the factory completely assembled and moved when necessary from one location to another. Thousands of Economics, and many of its imitators in service throughout the country, bear testimony to the soundness of the original design.

Hundreds of Laundries, Dyers, Dairies, Meat Packers, Railroads, Building Owners, etc., are buying Economics because the boiler produces steam rapidly and economically— because it is easy to fire and care for— because it is adapted by experienced engineers to all types of fuel and because, through more than 50 years of successful performance, it has been constantly refined and modernized in keeping with the most rigorous engineering standards.

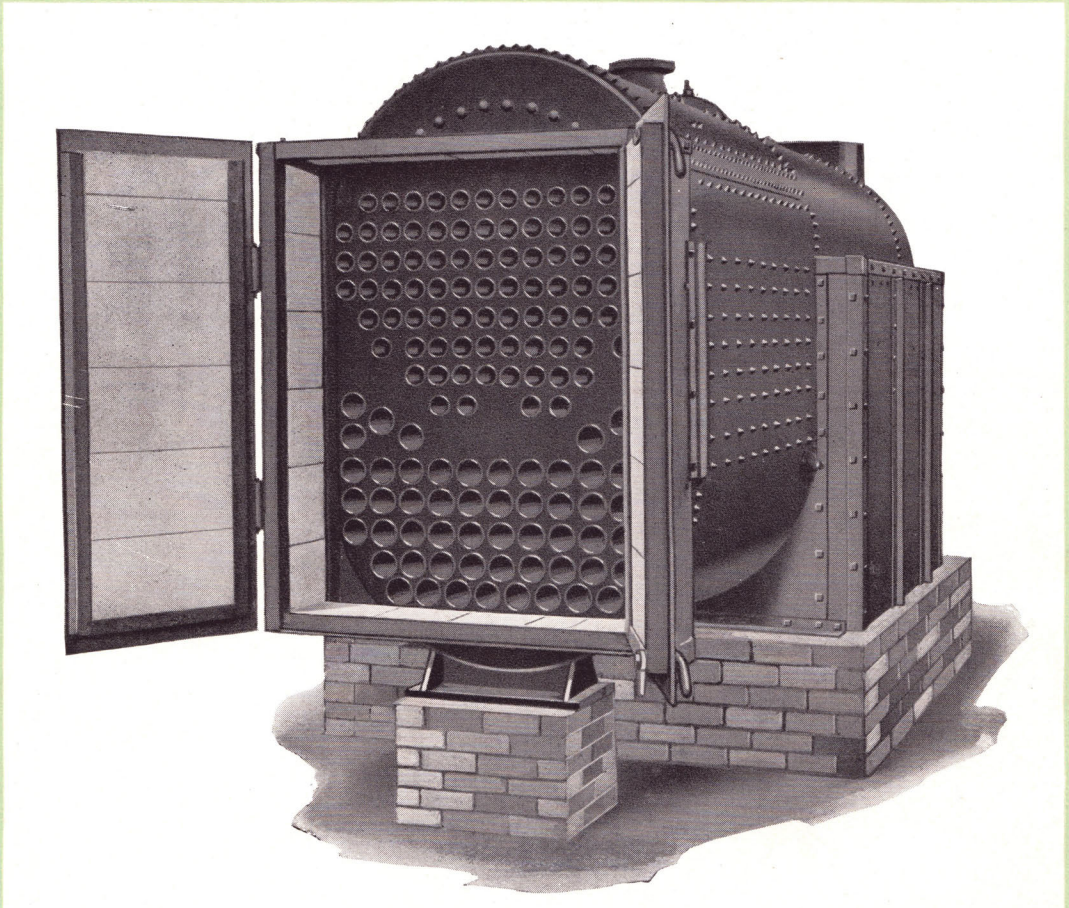
BOILER, FURNACE AND  BRICKWORK COMBINED

Economic vs. Water Leg Boiler

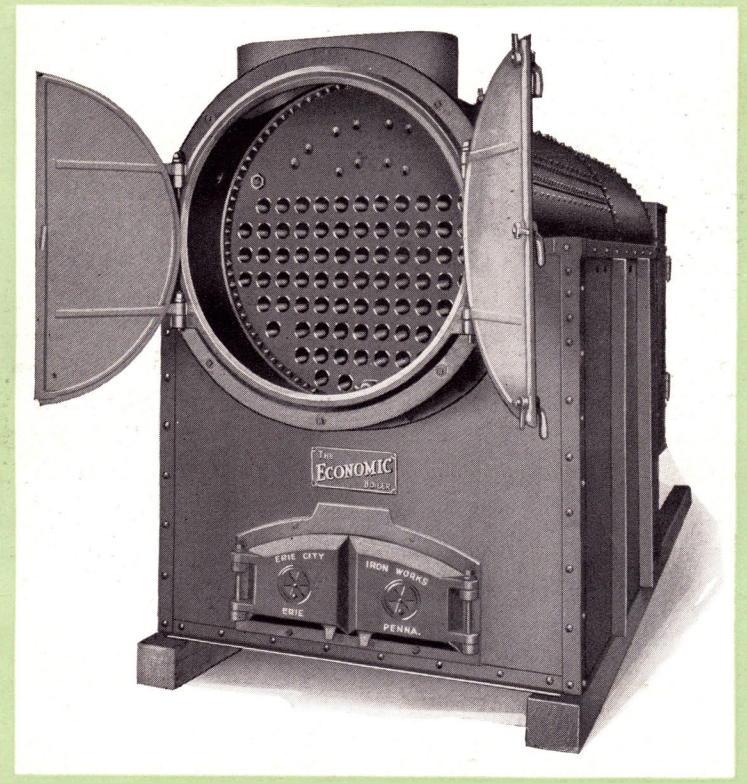
In the Economic Boiler, the objections to the ordinary firebox boiler for high pressure steam production are removed, while the portability feature is retained. Ordinary riveted firebox boilers of the water leg type are wasteful of fuel. This is due to the comparatively low temperature of the furnace side in that type of boiler. The sides, or water legs, get no hotter than the water contained, or about 350°, and therefore do little towards promoting combustion in the furnace.

When fresh coal is fed into a waterleg boiler a large part of the gases are set free at a low temperature. They pass through the boiler only partially consumed and precipitate soot, which soon impedes draft and reduces heat absorption.

When fresh coal is fed into an Economic, the released gases come in immediate contact with the refractory surfaces which are heated to 2000° or more. The constant radiation of heat from these surfaces into the fire bed provides perfect combustion conditions in the main furnace. The rear combustion chamber, also refractory lined, further improves conditions to the extent that the products of combustion in an Economic reach the stack almost completely consumed.



Opening Rear Combustion Chamber Doors Gives Access to the Entire Rear.



Opening Breeching Doors
Gives Access to 3″ Tubes.

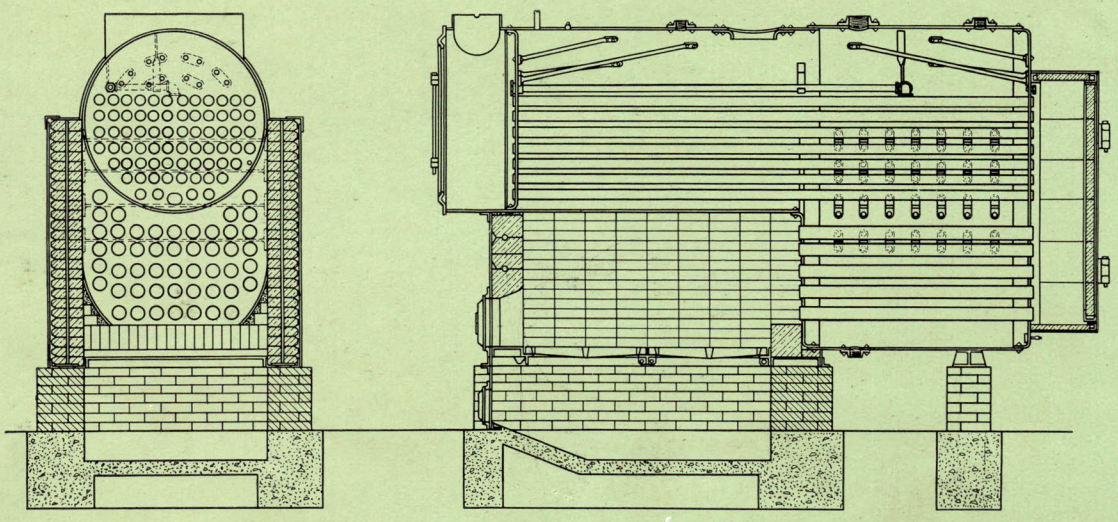
Uniform Gas Velocity

THE cross sectional tube areas in the two gas passes in the Economic are carefully proportioned to permit uniform gas velocity through the boiler.

The lower pass of short 4-inch tubes takes gases quickly from the main furnace. Considerable heat is absorbed in this pass with a consequent decrease in the volume of the gases.

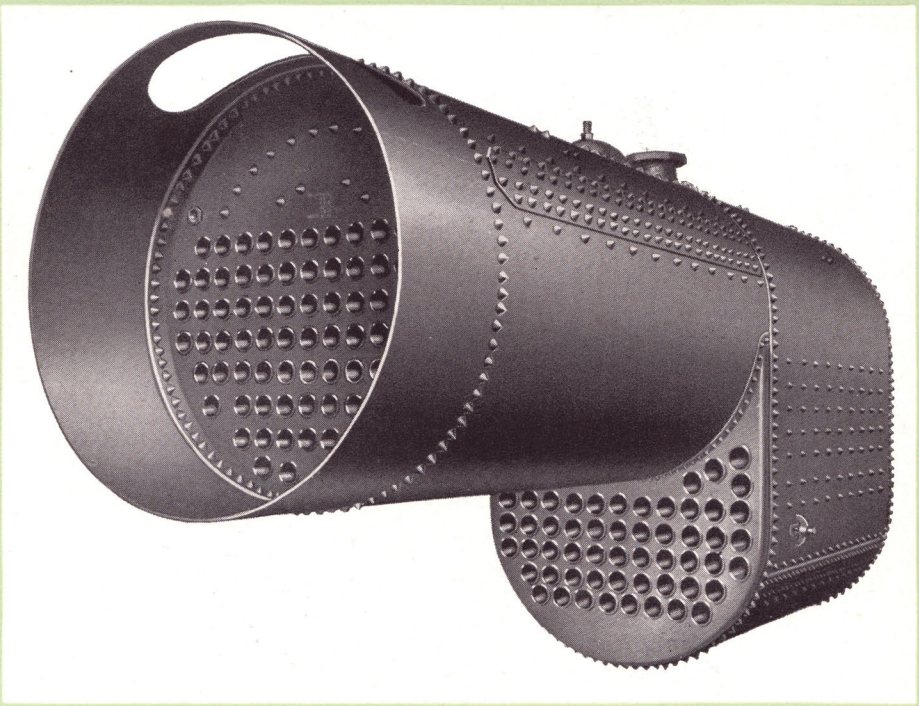
To compensate for this drop in volume, the cross sectional tube area in the second pass is reduced, thus assuring a uniform gas velocity in the two passes and, consequently, a uniform rate of heat transfer.

The use of smaller tubes in the return pass also serves to break up the water into smaller elements which aids heat absorption.



Sectional Elevation Showing the Method of Bracing and Staying the Pressure Part of the Economic Boiler.

At the Right Is Shown a Front View of the Boiler or Pressure Part of the Economic, Tested and Ready to Be Set over the Furnace.



Below Is Shown a Rear View of the Pressure Part. The Entire Rear of this Boiler Is Easily Accessible Through the Doors of the Rear Combustion Chamber.

The Economic Is Well Built

Materials and construction conform strictly to the A. S. M. E. Code for High Pressure Boilers.

Plates are of open hearth homogeneous steel, tested to 55,000 lbs. tensile strength and rolled to full specified thickness on the edge.

Rivet holes are punched ¼ inch small and reamed to size.

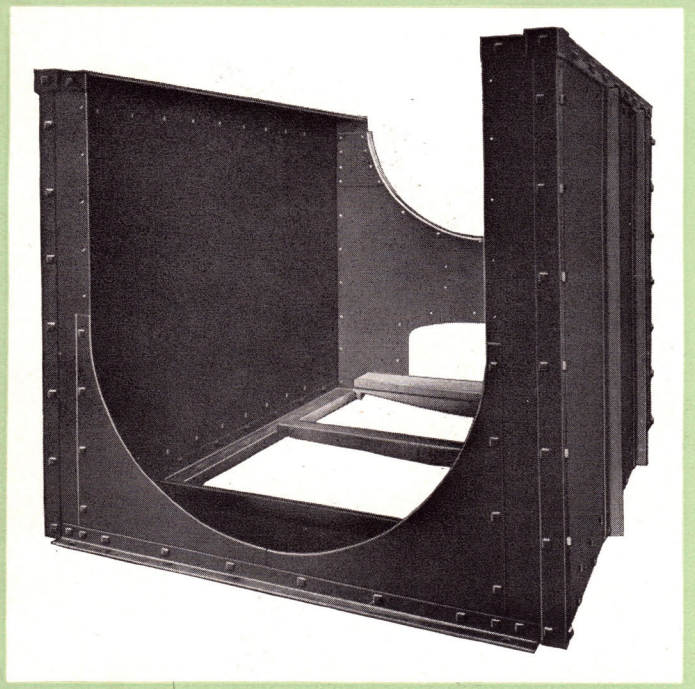
Rivets are of mild steel conforming to standard specifications for tensile strength and ductility.

Rivet seams are carefully proportioned to secure the strongest practical joint for the pressure designated.

Tubes are of mild steel of standard gauge and manufacture. Every tube is subjected to an internal hydrostatic test of 1000 lbs. per sq. inch.

Manholes are provided in boilers of 50 H. P. and larger; handholes are carefully located for cleanout and inspection in all sizes.

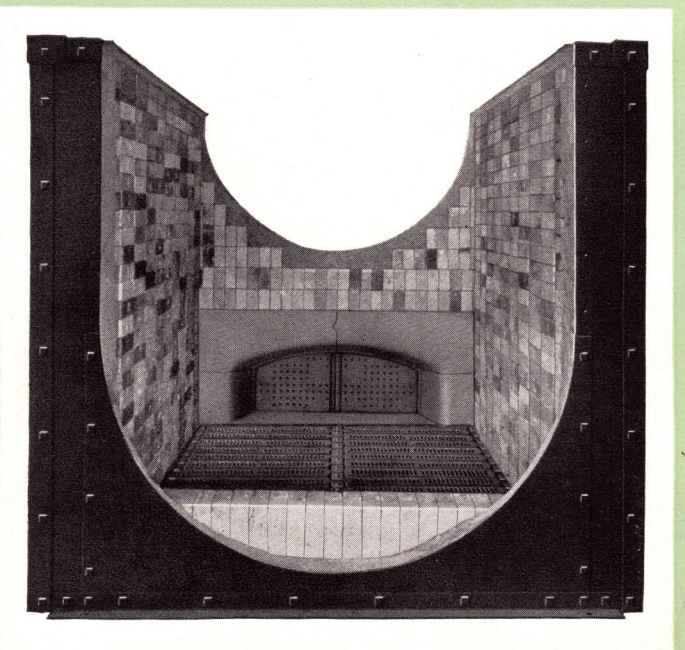
Forged steel nozzles are furnished for larger than 3-inch pipe size on all boilers for more than 100 lbs. W. P.

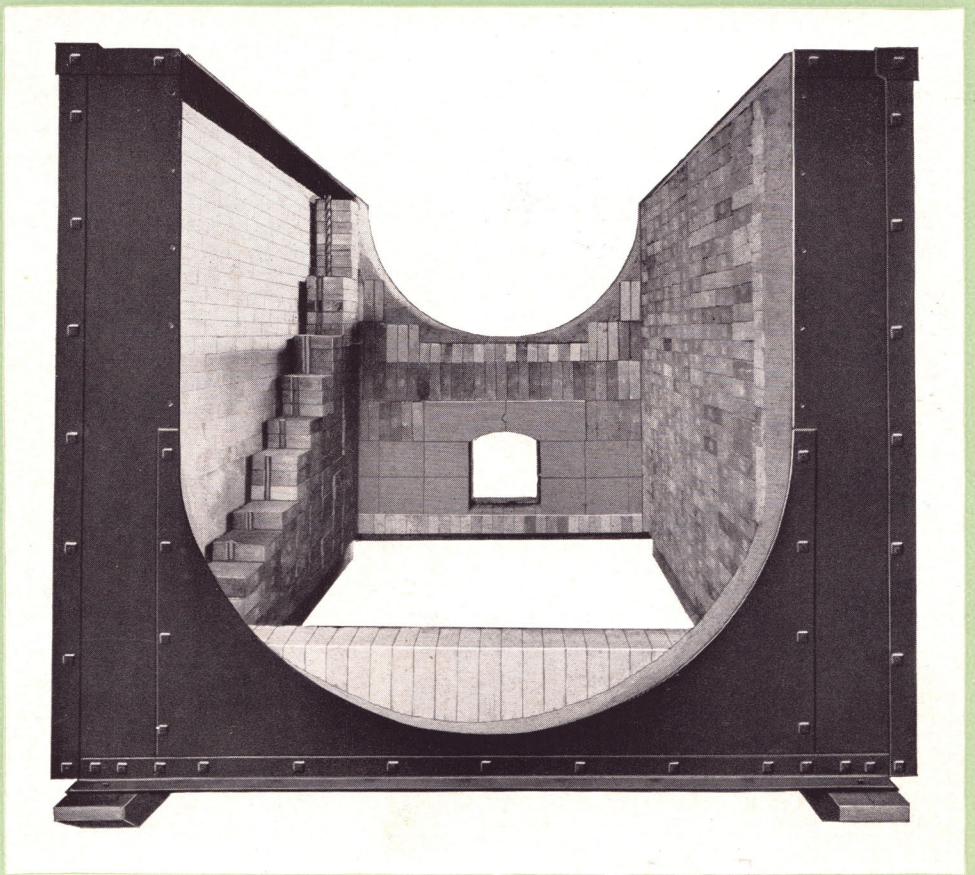


At the Left Is Shown the Bare Furnace Casing Ready to Be Bricked In with Special Economic Refractory Shapes. Grates and Bridge Wall Are to Be Installed. A 9-inch Refractory Lining Is Standard for Hand Fired Boilers.

Standard Economic Furnace—*9 In. Lining*

At the Right Is Shown a Standard Furnace for the Economic Boiler Completed and Ready for the Boiler or Pressure Part to Be Lowered into Position. A Vertical Rod Holds Each Row of Brick Firmly in Position in the Side Walls. Economics Are Shipped with All Brickwork in Place. No Brickwork Need Be Purchased for Boiler Proper.





13½ In. Furnace Lining for Oil, Gas or Stoker Firing

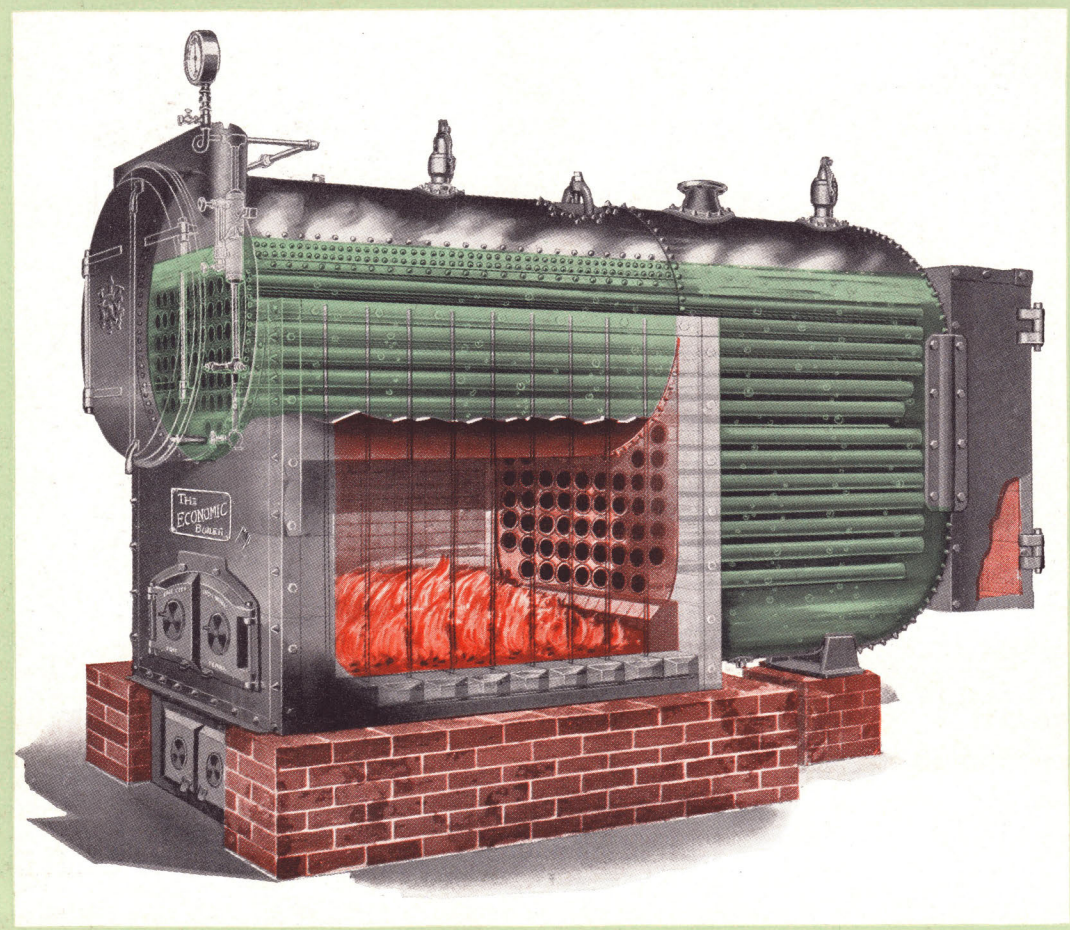
MANY years of experience have convinced us of the value of an extra good furnace lining to withstand higher furnace temperatures resulting from modern firing methods. Today, an Economic for oil, gas, stoker or other special firing conditions can be shipped with 13½-inch refractory wall.

Phantom views on pages 14 and 16 indicate our regular 13½-inch wall construction for special firing conditions. This single row of 13½-inch Economic Refractories securely held by vertical rods makes a very satisfactory furnace lining for higher temperatures.

Illustrated above is a special Economic furnace, made up of one row of 4½-inch insulating brick and a row of 9-inch Economic refractory tile. The function of the vertical rods in holding the tile securely in place is shown.

Modern firing methods require the best available furnace construction. That is why we have designed the Economic to take a 13½-inch refractory lining.

THE ERIE CITY ECONOMIC BOILER



THE ECONOMIC FOR HAND FIRING

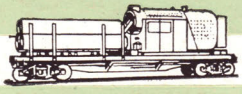
CAREFUL attention to details of design makes the Economic an efficient hand fired boiler.

Correctly proportioned grates, gas passages, heating surface and furnace volume contribute to make this boiler economical of fuel and responsive to sudden steam demands.

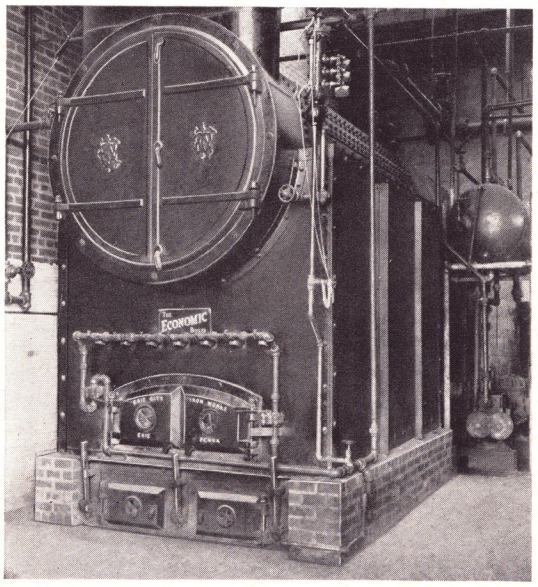
The generous use of a high grade refractory furnace lining and the close fitting steel casing keep the heat in the furnace, thus providing good combustion conditions and permitting extended firing periods. The ability of the Economic to store heat over night assures quick starting in the morning and minimum banking losses.

More than 50 years of application as a hand fired unit has established the Economic as one of the easiest to fire and to care for. Every part is easily and quickly accessible.

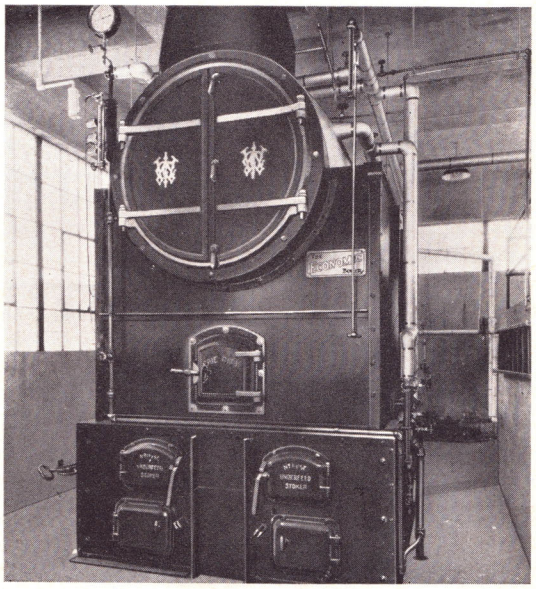
With an eye to simplifying the installation of an Economic for hand firing, we can furnish an all steel base (see lower illustration on next page) which eliminates the need for any outside brickwork and makes the entire unit portable. This base is sturdily built to last the life of the boiler.

BOILER, FURNACE AND  BRICKWORK COMBINED

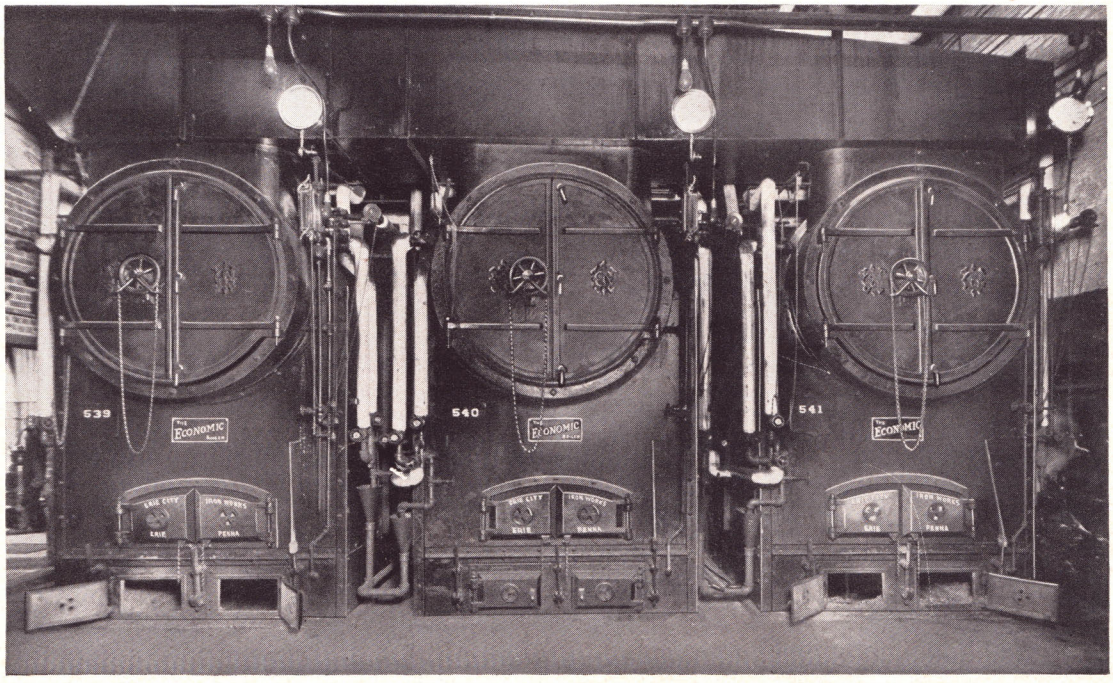
THE ERIE CITY ECONOMIC BOILER



A 200 H. P. Hand Fired Economic in a Dyeing Works in Woodside, N. Y.



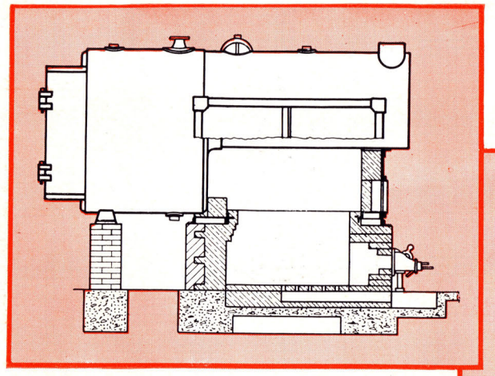
A 60 H. P. Economic with Special Stoker Setting.



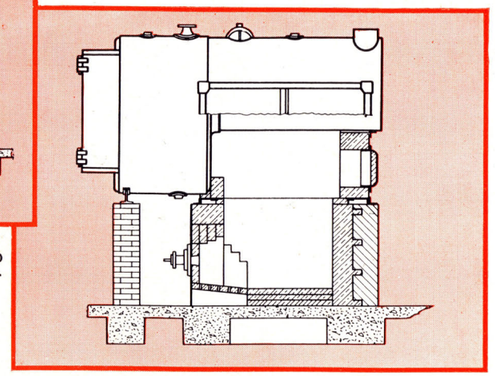
Three 200 H. P. Hand Fired Economics with Steel Bases Installed in a Large Railroad Plant in Buffalo, N. Y.

BOILER, FURNACE AND BRICKWORK COMBINED

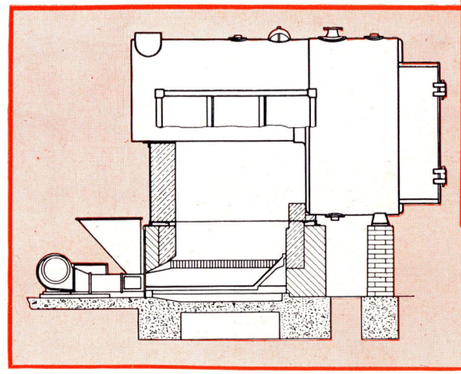
ECONOMICS FOR ALL FIRING METHODS



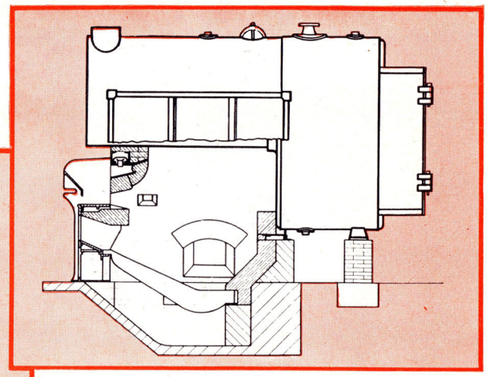
A STANDARD 60 H.P. ECONOMIC BOILER FIRED FROM THE FRONT BY A BEST OIL BURNER.



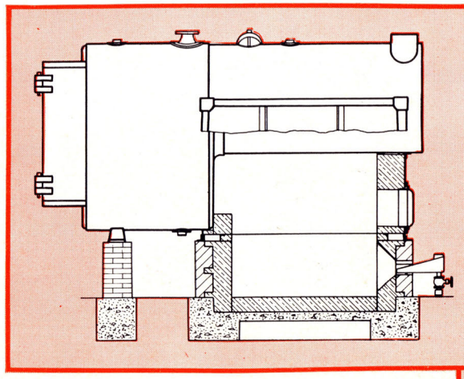
A STANDARD 50 H. P. ECONOMIC BOILER FIRED FROM THE REAR BY RAY OIL BURNER.



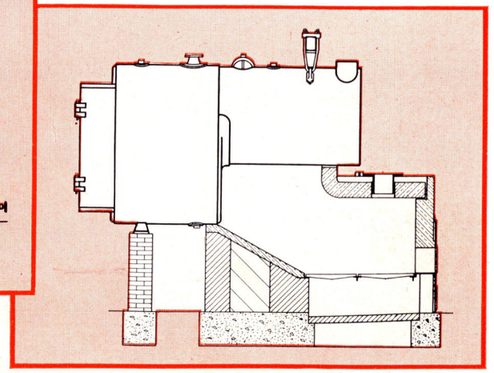
A STANDARD 80 H. P. ECONOMIC BOILER FIRED BY A DETROIT STOKER.



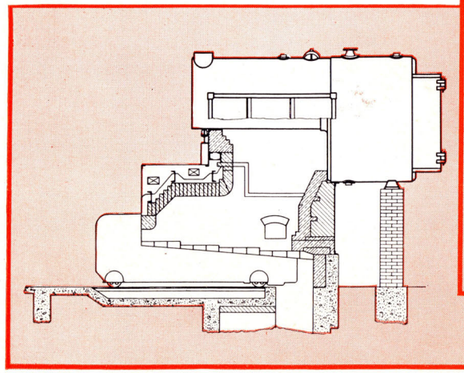
A STANDARD 80 H. P. ECONOMIC BOILER FIRED BY A HUBER HAND STOKER.



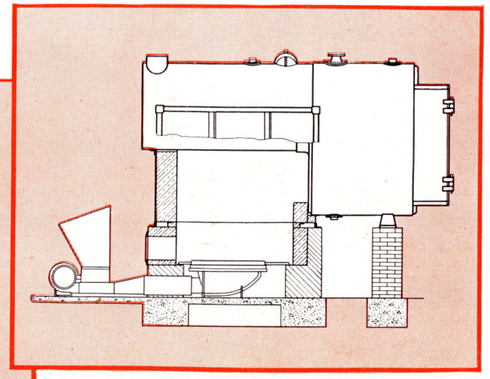
A STANDARD 100 H. P. ECONOMIC BOILER FIRED FROM THE FRONT WITH NATURAL GAS.



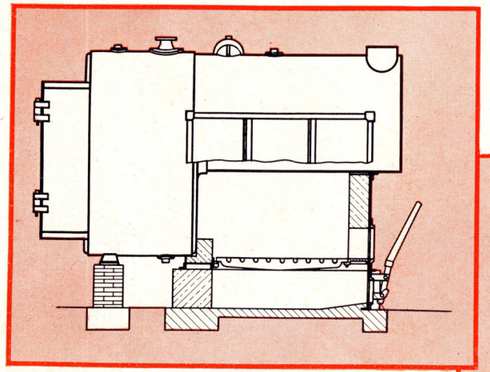
A STANDARD 125 H. P. ECONOMIC SPECIALLY SET FOR SAW DUST FIRING.



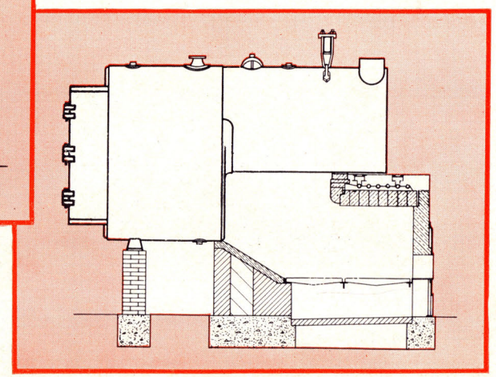
A STANDARD 100 H. P. ECONOMIC SPECIALLY SET FOR A LACLEDE CHAIN GRATE STOKER.



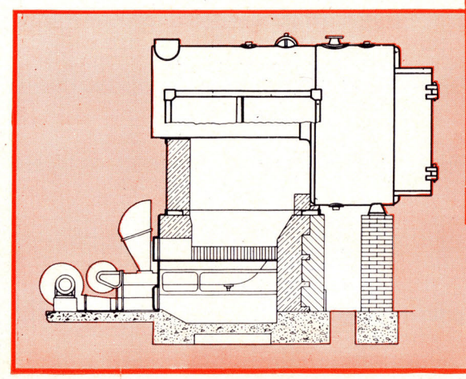
A STANDARD 100 H.P. ECONOMIC BOILER FIRED BY AN IRON FIREMAN STOKER.



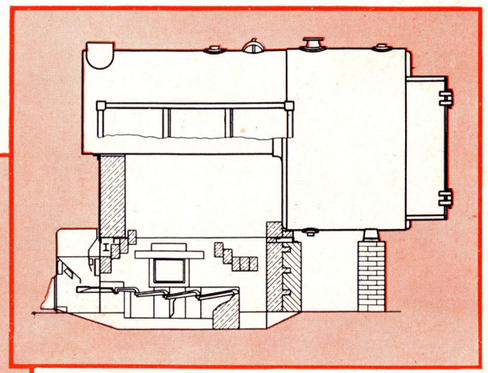
A STANDARD 80 H. P. ECONOMIC WITH ERIE CITY SHAKING GRATES FOR HAND FIRING.



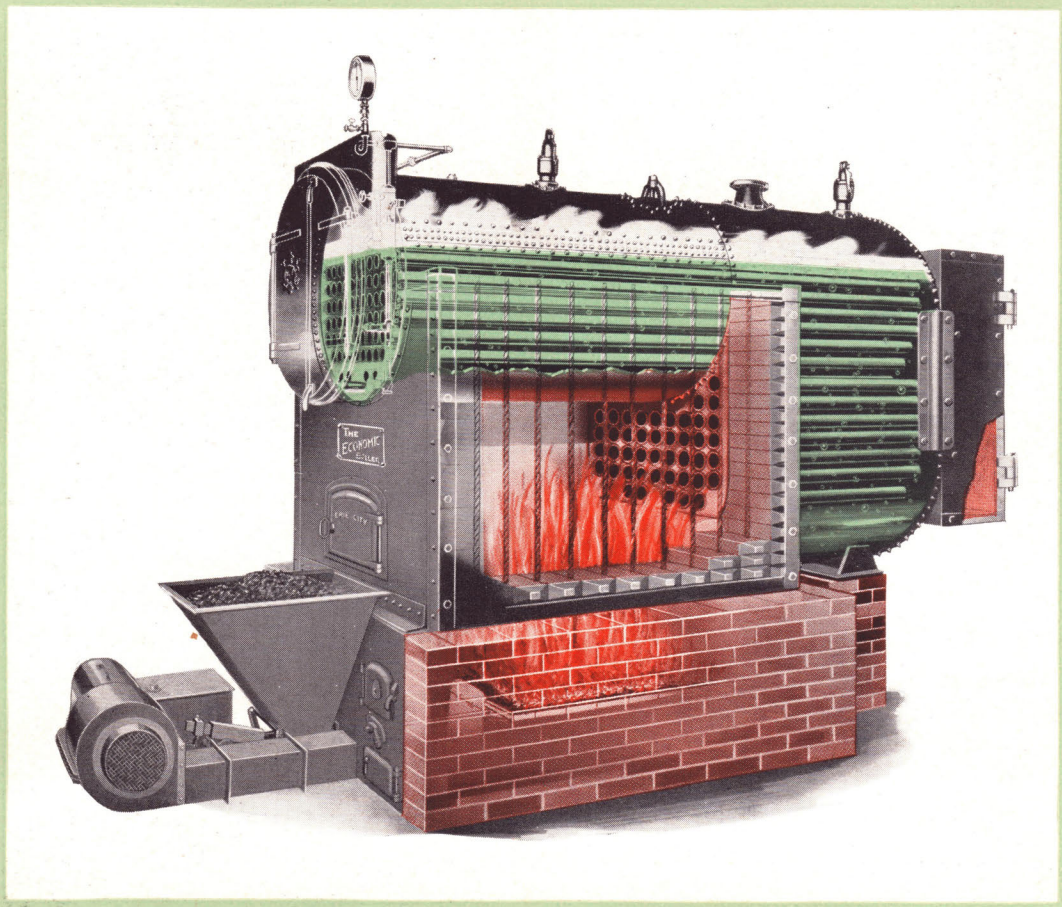
A STANDARD 200 H.P. ECONOMIC BOILER SPECIALLY SET FOR WOOD FIRING.



A STANDARD 80 H. P. ECONOMIC BOILER FIRED BY A RILEY STOKER.



A STANDARD 100 H.P. ECONOMIC BOILER FIRED BY A KING COAL STOKER.



THE ECONOMIC FOR STOKER FIRING

THE increasing popularity of stoker firing among smaller plants has led to its wide application to Economic boilers.

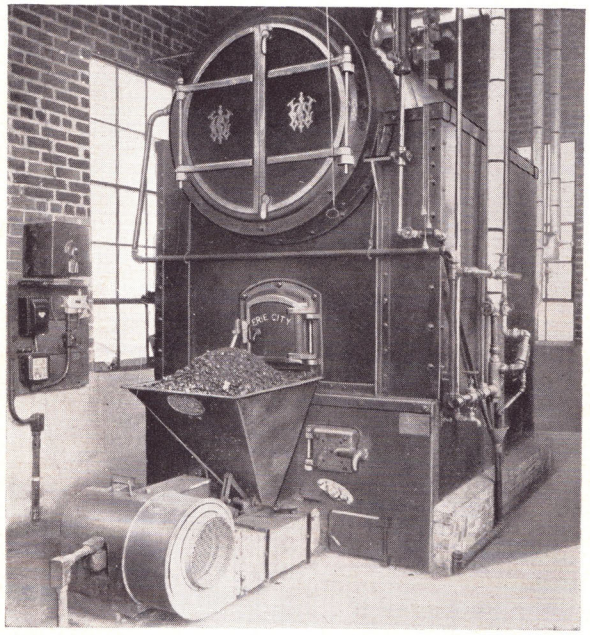
With the knowledge that a good stoker correctly applied will save from 15% to 50% of its cost annually, we have carefully adapted the Economic to meet the requirements of every well designed stoker.

Our engineers are constantly co-operating with stoker manufacturers in order to be certain that stoker fired Economics are correctly installed and that greater loads can be easily and efficiently carried.

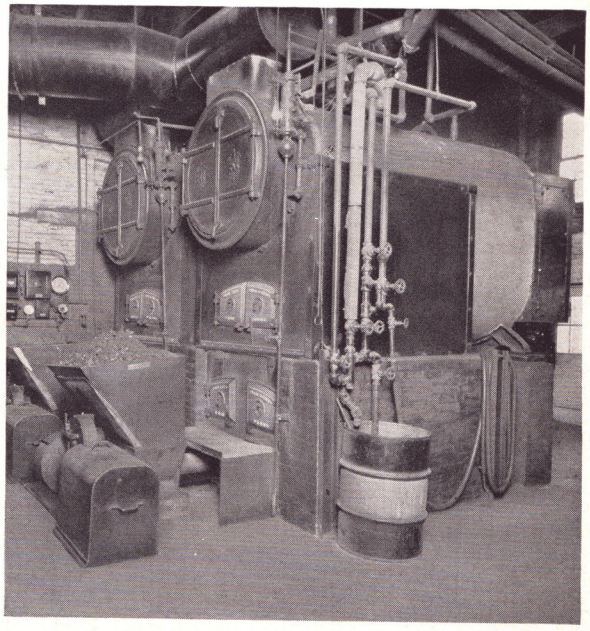
Stoker firing is, of course, more efficient than hand firing and calls for larger furnace volume and, for best results, a thicker furnace wall. These conditions are met in the standard Economic specified for stoker firing.

Several hundred Economics are stoker fired. It is, therefore, possible for you to make independent investigations of any type of stoker installation in which you may be interested. We shall be glad to give you a list of stoker fired Economics located near you.

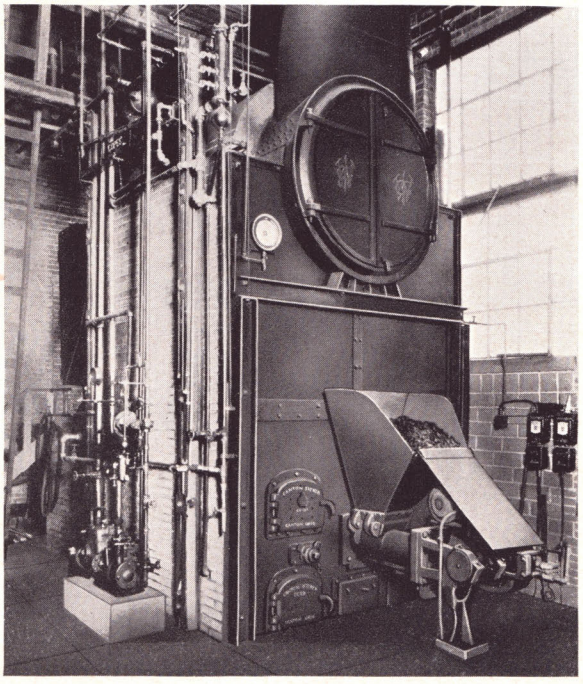
THE ERIE CITY ECONOMIC BOILER



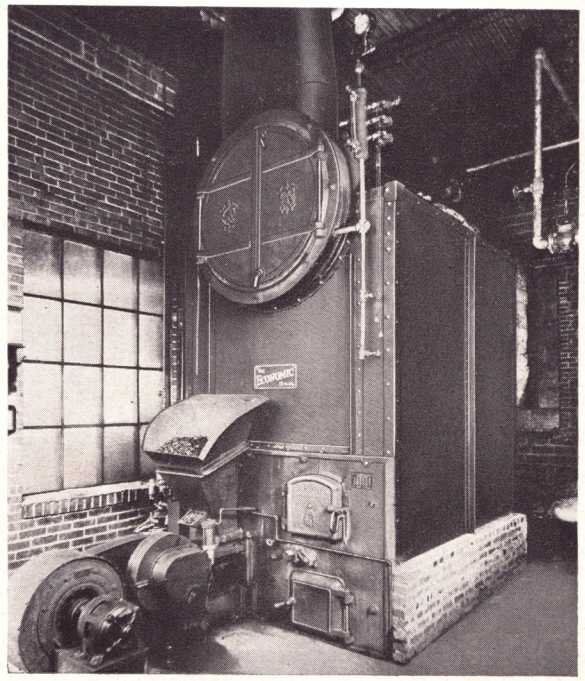
An 80 H. P. Economic with 13½-inch Walls, Installed in Columbus, Ohio. Fired by Detroit Junior Stoker.



Two 60 H. P. Economics in a Cleveland, Ohio, Public Institution, Fired by Iron Fireman Stokers.

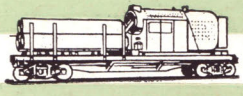


A 150 H. P. Economic in a Midwestern Plant. Fired by a Canton Stoker.

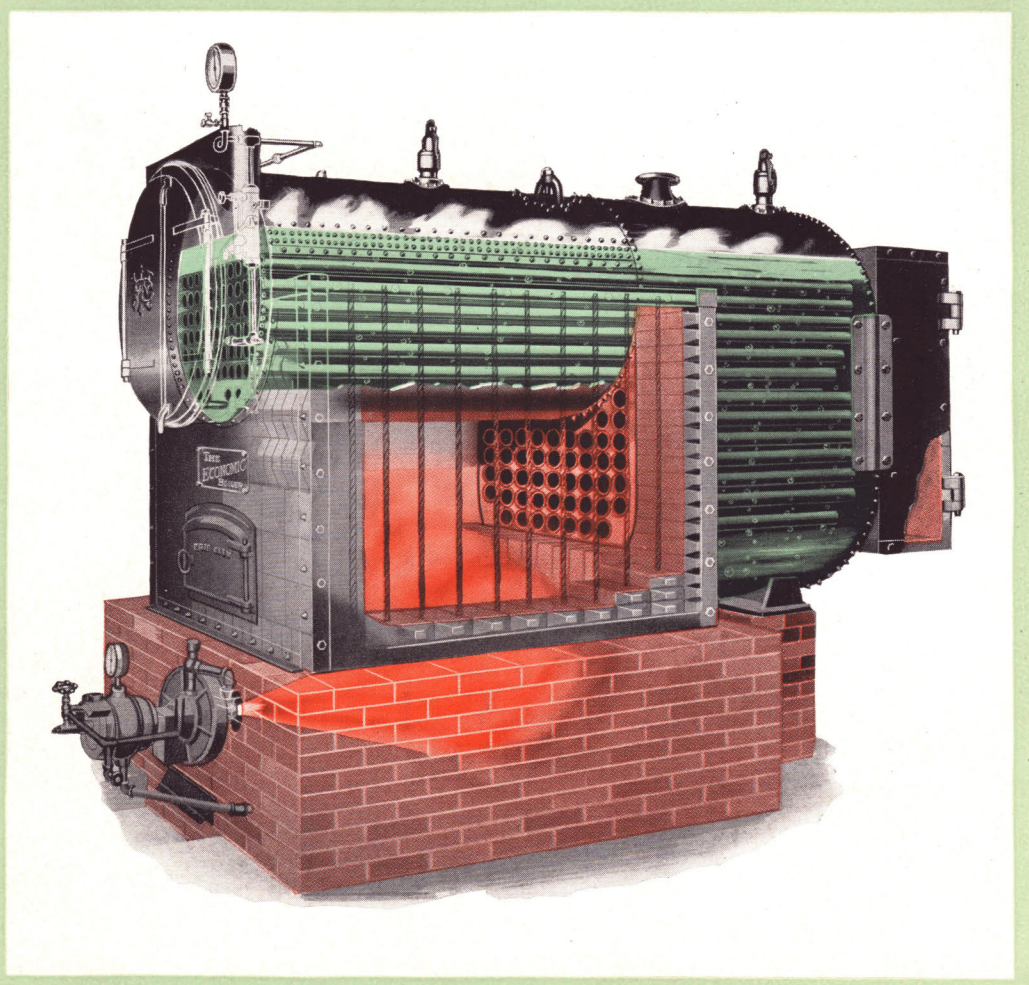


A 125 H. P. Economic with 13½-inch Walls, Installed in Akron, Ohio, Fired by Jones Stoker.

BOILER, FURNACE AND



BRICKWORK COMBINED

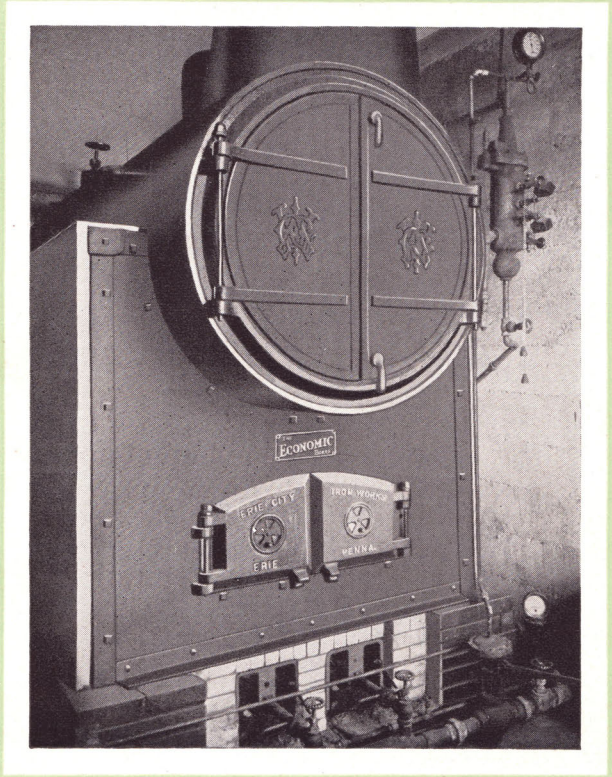


THE ECONOMIC FOR OIL OR GAS FIRING

WITH the great improvement in oil and gas burners and because of the more general appreciation of the convenience and cleanliness of these fuels, there is a constantly increasing number of Economics being installed for this type of firing.

Our experience in the installation of many types of large boilers arranged for oil and gas firing is of great value to the prospective purchaser, and our engineering department is always ready to give suggestions on the best fuel for a given set of operating conditions.

When the Economic is oil fired, the ash handling problem is entirely eliminated, smokeless operation is assured and there is a cleanliness and neatness in the boiler room which is an important factor in such industries as bakeries, dairies, laundries, and other manufacturing processes where the product can become easily contaminated by dust and dirt. Where there is an intermittent or widely varying load demand, flexibility of operation can be obtained which would be impossible with any solid fuel in boilers of this size.



Economics Burn Gas Efficiently

At the left is shown a 60 H. P. Erie City Economic Boiler installed in the Rapid City Laundry, Rapid City, S. D. It is fired by two No. 6 Mettler Gas Burners (burning natural gas) inserted in the base. This boiler has replaced a 100 H. P. Stationary Boiler.

Performance Data

Stack Temperature at Damper . . . 350°
Draft . . . . . .02″ water
Excess Air 13%
Flue Gas Analysis 10.2% CO^2 and no CO indicating a total flue gas loss of only 16% of theoretical in gas burned.*

*Of the above 16% total flue gas loss 10.2% is that from the combustion of the hydrogen in the natural gas which is an unavoidable loss. The dry gas of 5.8% when operating at 100% rating shows remarkable heat absorption by the boiler.

Economics Burn Oil Efficiently

Results of a Test on an Oil Fired Economic

TEST of boiler located at H. P. Hood & Sons, Inc., 155 Massachusetts Avenue, Cambridge, Massachusetts, to determine the average equivalent evaporation per pound of oil as fired and combined boiler and furnace efficiency.

NUMBER AND KIND OF BOILER
One 60 H. P. Erie City Economic Boiler with plain oil furnace, fired by one No. 2-A turbine burner with air register.

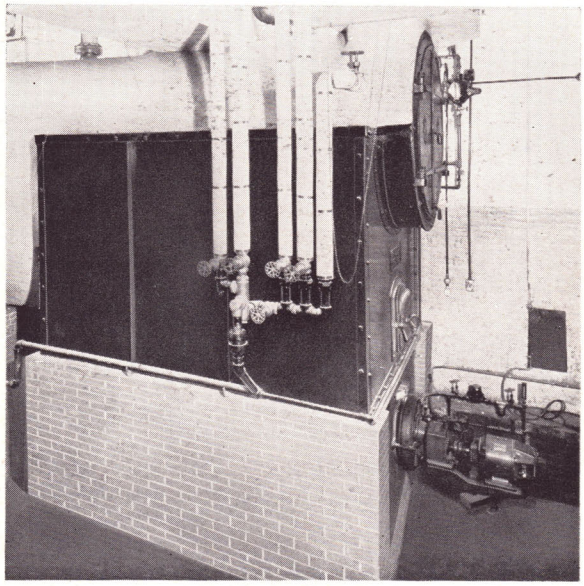
WATER HEATING SURFACE . . . 600 sq. ft.

KIND OF FUEL
P. H. & P. Co. fuel oil . . . 18,400 B.t.u.

QUALITY OF STEAM
Percentage of moisture in steam assumed . 2%

AVERAGE PRESSURES, TEMPERATURES, ETC.
Steam pressure by gauge . . . 14.0 lbs.
Oil temperature at heater . . . . 207.0°F.
Average temperature of boiler room, approximately . . . . . 100°F.
Temperature of feed water entering boiler 181.6°F.
Temperature of gases leaving boiler . . 611.0°F.
Draft at boiler flue outlet—inches of water . .15

—Test continued on next page



A 200 H. P. Economic, Oil Fired, Is Installed in a Baltimore Bakery. This 200 H. P. Economic Boiler with 13½-inch Refractory Lining Is Shown in Transit Below.

Oil Test (*Continued*)

Total Quantities

Observations made at 15 minute intervals—	
Duration of test	5 hrs.
Total weight of oil consumed	1,351.45 lbs.
Total water fed to boiler	19,754.00 lbs.
Total water evaporated (corrected for quality of steam)	19,358.90 lbs.
Factor of evaporation	1.044
Total equivalent evaporation from and at 212° F.	20,210.69 lbs.

Hourly Quantities and Rates

Oil consumed per hour	270.29 lbs.
Water evaporated per hr. F & A 212° F.	4,042.14 lbs.
Evaporation per hr. F & A 212° F. per sq. ft. heating surface	6.74 lbs.

Capacities

Boiler H. P. developed	117.2
Percent of rated capacity developed	195%

Economy

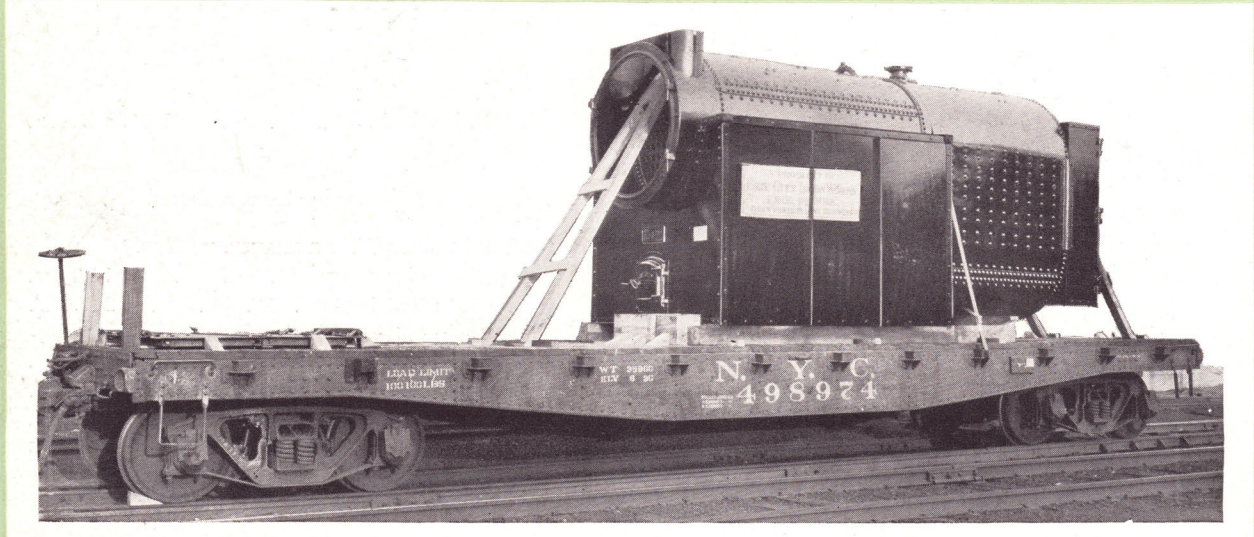
Water evaporated per lb. of oil.	14.32 lbs.
Equivalent evaporation F & A 212° F.	14.95 lbs.
Pounds of oil per Boiler H. P. hour	2.36 lbs.
Efficiency of boiler and furnace	78.8%

ANALYSIS OF FLUE GAS (Volumetric)

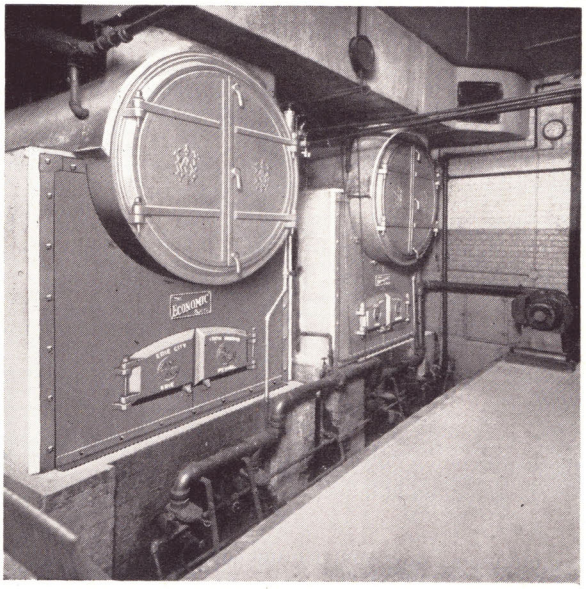
Gas Samples Taken Through Hole In Breeching Near Boiler Outlet

Carbon Dioxide—CO_2	11.50%
Oxygen—O	4.90%
Carbon Monoxide—CO	.03%
Nitrogen (by difference)—N	83.57%
	100.00%

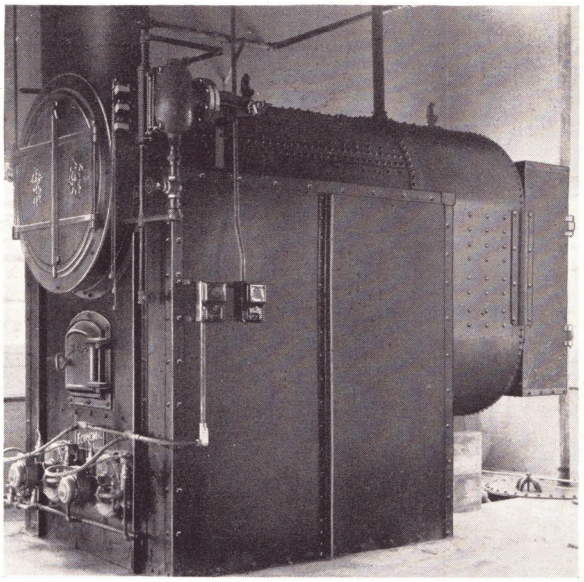
Submitted by A. M. Wilford
Petroleum Heat and Power Company
834 Commonwealth Ave., Boston, Mass.



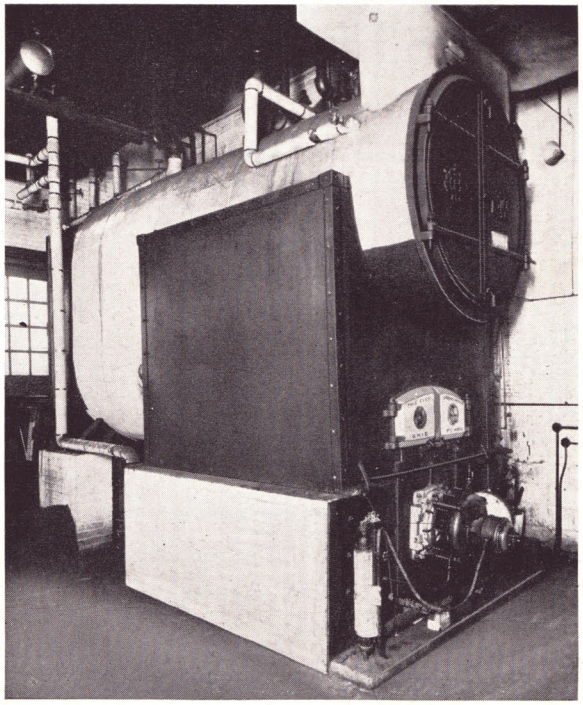
THE ERIE CITY ECONOMIC BOILER



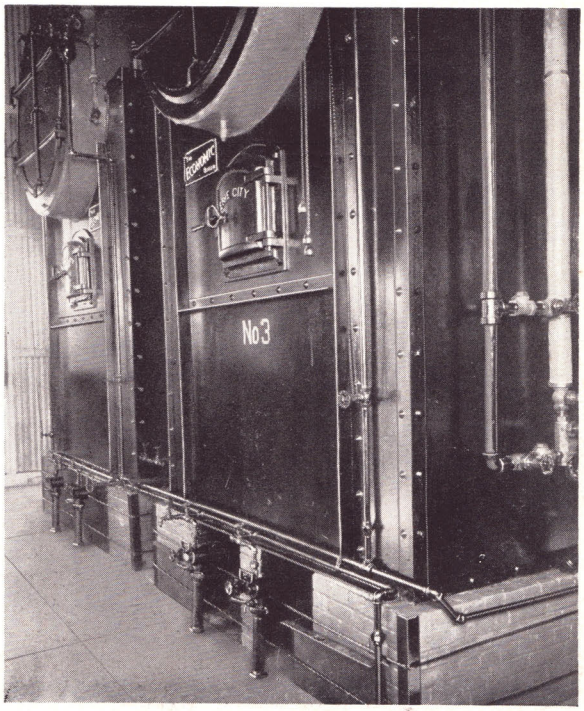
TWO 100 H. P. ECONOMIC BOILERS, OIL FIRED, IN A LARGE INDUSTRIAL PLANT IN CHICAGO, ILLINOIS.



AN 80 H. P. ECONOMIC, OIL FIRED, IN A LARGE MID-WESTERN DAIRY. A DUPLICATE OF THIS UNIT HAS SINCE BEEN INSTALLED.



A 100 H. P. OIL FIRED ECONOMIC IN A MIDWESTERN PLANT. EXTENDED BASE GIVES LARGE FURNACE VOLUME.

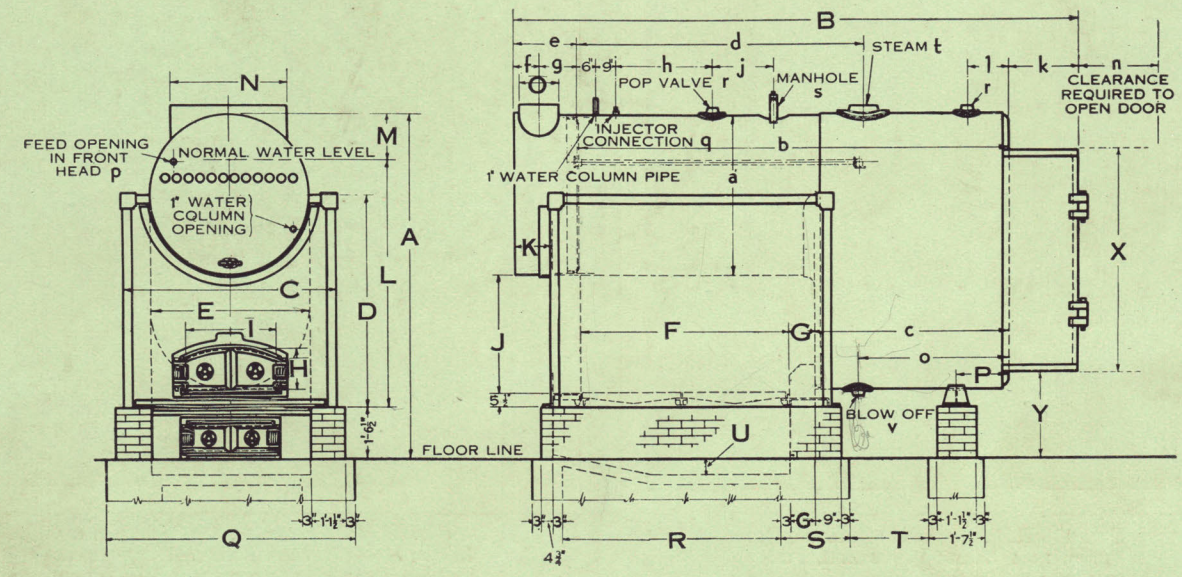


THESE TWO 150 H. P. OIL FIRED ECONOMICS ARE INSTALLED IN A LARGE OIL REFINERY IN LOUISIANA.

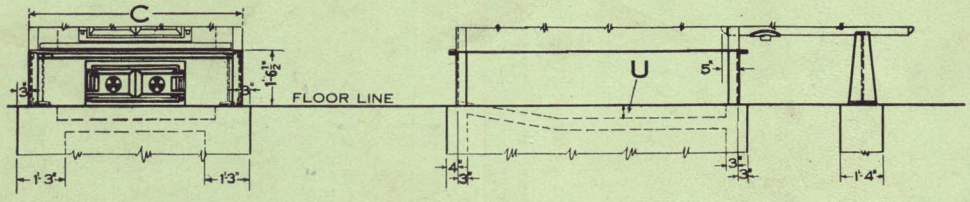
BOILER, FURNACE AND BRICKWORK COMBINED

CLEARANCE AND DIMENSION SKETCH

Boiler and Brick Base



Steel Base



STANDARD EQUIPMENT

With the Economic Boiler Inciudes

GRATES

STEAM GAUGE AND SYPHON

WATER GAUGE

WATER COLUMN AND PIPING

GAUGE COCKS

POP SAFETY VALVES

BLOW-OFF VALVE

BLOW-OFF COCK (Over 100 lbs. W.P.)

STOP VALVE

CHECK VALVE

SMOKE STACK

GUYS (6 times length of stack)

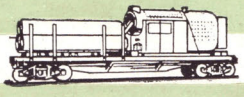
DAMPER AND ROD

TABLE OF DIMENSIONS

No.	120	121	122	123	124	125	126	127	128	130	132
H.P.	20	30	40	50	60	80	100	125	150	200	250
A	6′- 9¼″	7′- 2″	7′- 6″	8′- 1¾″	8′- 1¾″	9′- 9½″	9′- 9½″	10′- 0½″	10′- 0½″	11′- 0½″	12′- 6½″
B	11′- 4″	11′-10″	12′- 9″	12′- 5″	14′- 2¾″	13′-10″	16′- 1½″	16′- 6¼″	18′- 8″	20′- 2½″	21′- 2½″
C	4′- 1⅞″	4′- 7⅜″	4′-11⅜″	5′- 3⅞″	5′- 3⅞″	6′- 1⅜″	6′- 1⅜″	6′- 7⅜″	6′- 7⅜″	7′- 1⅜″	8′- 4⅜″
D	3′-11½″	4′- 1½″	4′- 3½″	4′- 9″	4′- 9″	6′- 0″	6′- 0″	6′- 0″	6′- 0″	6′- 9″	7′- 6″
E	2′- 6½″	3′- 0″	3′- 4″	3′- 8½″	3′- 8½″	4′- 6″	4′- 6″	5′- 0″	5′- 0″	5′- 6″	6′- 0″
F	3′- 7″	4′- 1″	4′- 7″	4′- 7″	5′- 1″	5′- 1″	6′- 1″	6′- 1″	6′- 7″	7′- 7″	8′- 1″
G	6″	6″	6″	6″	9″	9″	9″	9″	9″	9″	9″
H	11″	12½″	12½″	14″	14″	14″	14″	14¾″	14¾″	14¾″	2 separate openings
I	17½″	26½″	26½″	32″	32″	32″	32″	38″	38″	38″	
J	2′- 2¾″	2′- 2″	2′- 2″	2′- 5¼″	2′- 5¼″	3′- 3½″	3′- 3½″	3′- 0½″	3′- 0½″	3′- 6½″	4′- 0½″
K	8½″	11½″	11½″	11½″	11½″	1′- 1½″	1′- 1½″	1′- 3½″	1′- 3½″	1′- 3½″	1′- 5″
L	4′- 6¼″	4′-10¾″	5′- 1¼″	5′- 9¼″	5′- 9¼″	7′- 1⅜″	7′- 1⅜″	7′- 2½″	7′- 2½″	8′- 2″	8′-10½″
M	8½″	8¾″	10¼″	10″	10″	1′- 1⅝″	1′- 1⅝″	1′- 3½″	1-′ 3½″	1′- 4″	1′- 7½″
N	1′- 9″	2′- 3″	2′- 6″	2′- 6″	2′- 6″	3′- 5″	3′- 5″	3′- 4″	3′- 4″	4′- 9″	5′- 0″
O	9″	1′- 0″	1′- 0″	1′- 0″	1′- 0″	1′- 2″	1′- 2″	1′- 4″	1′- 4″	1′- 4″	1′-10″
P	1′- 0″	1′- 0″	1′- 0″	1′- 0″	1′- 0″	1′- 0″	1′- 6″	1′- 6″	2′- 0″	2′- 0″	2′- 0″
Q	5′- 3½″	5′- 9″	6′- 1″	6′- 5½″	6′- 5½″	7′- 3″	7′- 3″	7′- 9″	7′- 9″	8′- 3″	9′- 6″
R	3′-10″	4′- 4″	4′-10″	4′-10″	5′- 4″	5′- 4″	6′- 4″	6′- 4″	6′-10″	7′-10″	8′- 8½″
S	1′- 9″	1′- 9″	1′- 9″	1′- 9″	2′- 0″	2′- 0″	2′- 0″	2′- 0″	2′- 0″	2′- 0″	2′- 0″
T	1′- 2¾″	11¾″	1′- 4¾″	11¾″	2′- 0½″	1′- 5¾″	2′- 3¼″	2′- 6″	3′- 7¾″	4′- 1¾″	4′- 1¾″
U	6″	6″	6″	6″	6″	9″	9″	9″	9″	9″	9″
X	3′- 3″	3′- 7″	4′- 0″	4′- 8″	4′- 8″	6′- 3″	6′- 3″	6′- 4″	6′- 4″	7′- 2″	7′-10″
Y	2′- 9″	2′- 8″	2′- 8″	2′- 8″	2′- 8″	2′- 6″	2′- 6″	2′- 6″	2′- 6″	2′- 7″	3′- 2″
a	30½″	36″	40″	44½″	44½″	54″	54″	60″	60″	66″	72″
b	8′- 3¼″	8′- 6¼″	9′- 5¼″	9′- 0¼″	10′-10″	10′- 3¼″	12′- 6¾″	12′- 9½″	14′-11¼″	16′- 5¼″	16′-11¼″
c	4′- 0½″	3′- 9½″	4′- 2½″	3′- 9½″	4′-10¼″	4′- 3½″	5′- 7″	5′- 9¾″	7′- 5½″	7′-11½″	7′-11½″
d	5′- 3″	5′- 9¼″	6′- 5″	6′- 3¼″	7′- 1″	7′- 2¼″	8′- 3¾″	8′- 2½″	8′-11¼″	10′- 0″	10′- 6″
e	1′- 3¾″	1′- 6¾″	1′- 6¾″	1′- 6¾″	1′- 6¾″	1′- 8¾″	1′- 8¾″	1′-10¾″	1′-10¾″	1′-10¾″	2′- 4¾″
f	6½″	8″	8″	8″	8″	9″	9″	10″	10″	10″	1′- 1″
g	9¼″	10¾″	10¾″	10¾″	10¾″	11¾″	11¾″	1′- 0¾″	1′- 0¾″	1′- 0¾″	1′- 3¾″
h	2′- 0″	2′- 6″	2′- 9″	9″	1′- 0″	1′- 9″	2′- 9″	1′- 0″	1′- 0″	1′- 0″	.....
j	.....	.....	.....	2′- 2″	2′- 8″	1′-10″	1′- 9″	3′- 8″	4′- 1″	5′- 0″	.....
k	1′- 9″	1′- 9″	1′- 9″	1′-10″	1′-10″	1′-10″	1′-10″	1′-10″	1′-10″	1′-10½″	1′-10½″
l	.....	.....	.....	1′- 3″	1′- 3″	1′- 3″	1′- 3″	1′- 3″	1′- 3″	1′- 3″	1′- 3″
n	2′- 0″	2′- 2″	2′- 4″	2′- 6″	2′- 6″	2′-11″	2′-11″	3′- 2″	3′- 2″	3′- 5″	3′- 8″
o	2′- 9¼″	2′- 6¼″	2′-11¼″	2′- 6¼″	3′- 7″	3′- 0¼″	4′- 3¾″	4′- 6½″	6′- 2¼″	6′- 8¼″	6′- 8¼″
p	1″	1¼″	1¼″	1¼″	1¼″	1¼″	1½″	1½″	1½″	2″	2″
q	¾″	¾″	1″	1″	1″	1¼″	1¼″	1½″	1½″	2″	2″
r	1 - 1¼″	1 - 1½″	1 - 2″	2 - 1½″	2 - 1½″	2 - 2″	2 - 2″	2 - 3″	2 - 3″	2 - 3″	3 - 3″
s	None	None	None	11″x15″	11″x15″	11″x15″	11″x15″	11″x15″	11″x15″	11″x15″	11″x15″
t	2½″	2½″	3″	3½″	3½″	4″	5″	5″	6″	6″	6″
v	1½″	1½″	1½″	2″	2″	2″	2″	2″	2½″	2½″	2½″

NOTE—Above dimensions are approximate; follow working drawings.

250 H.P. BOILER ONLY—Standard height of base 2′-0½″. Regularly built with 13½″ firebrick lining in firebox and 18″ side walls in brick base. 1¼″ water column connections. Two separate fire door openings. All pop openings on rear course 1′-3″ centers. Manhole opening 6′-9″ from front head.



BOILER, FURNACE AND BRICKWORK COMBINED

JUST A FEW OF THE LARGER USERS OF ECONOMIC BOILERS

Dairies

Borden's Farm Products	149
Dairymens League Cooperative Assn.	26
Harbison Dairies	16
Harmony Creamery	10
Lexington Dairies	7
Pet Milk	9
Sheffield Farms	104
Supplee-Wills Jones	13
Telling Belle Vernon	7
Whitehouse Milk	6
Breyer Ice Cream Co.	6

Railroads

B. & O.	25
Atlantic Coast Line	8
C. R. I. & P.	10
Canadian Pacific	5
Lehigh Valley	7
Missouri Pacific	14
New York Central	98
Philadelphia & Reading	5
L. & N.	20
Southern Pacific	14
Texas & Pacific	24
Union Pacific	57
Western Maryland	11

Oil Companies

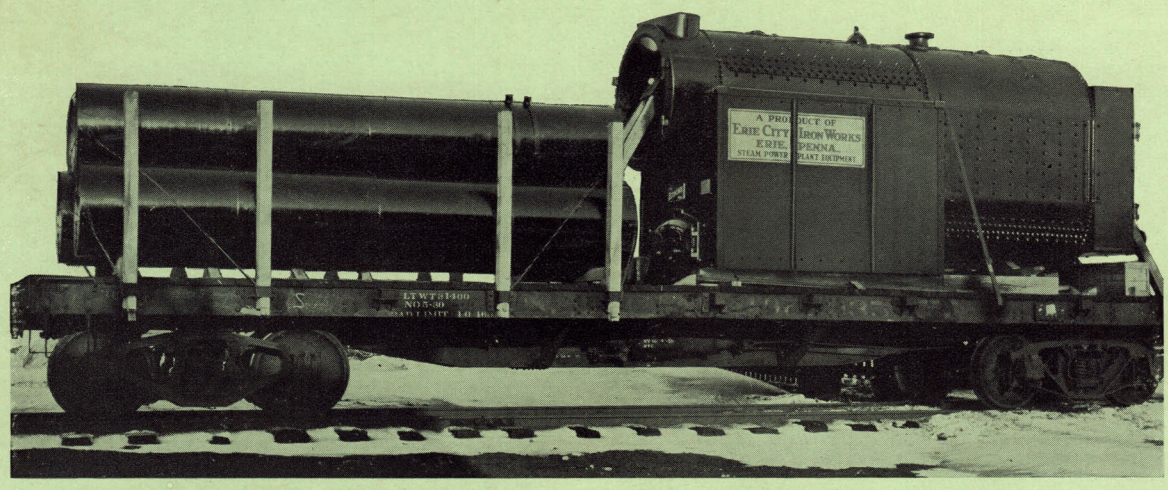
American Oil Co.	5
Gulf Refining Co.	11
Magnolia Petroleum Co.	8
Standard Oil Co.	29
Sun Oil Co.	8
Texas Co.	35

Food Manufacturers

Continental Baking Co.	8
Ward Baking Co.	7
A. & P. Prod. Co.	8
Armour & Co.	58
H. J. Heinz Co.	7
Swift & Co.	72

Miscellaneous

American Warm. & Vent. Co.	6
Amtorg Trading Corp.	44
Baltimore Heat Corp.	6
Barrett Co.	8
Bethlehem Steel Co.	8
British American Tobacco Co.	5
Coxe Bros. Inc.	13
Ford Motor Co.	5
General Fire Extinguisher Co.	7
Massey Concrete Prod. Co.	9
Mavis Bottling Co.	8
Medina Irrigation Co.	9
Pittsburgh Plate Glass	9
Westinghouse Electric Co.	9
Youngstown Car Mfg. Co.	5
James Beggs Co.	154



SPECIFICATIONS FOR ECONOMIC BOILERS

100 Pounds Steam Working Pressure

Conforming to A.S.M.E. Boiler Code

SIZE NUMBER	120	121	122	123	124	125	126	127	128	130	132
HORSE POWER AS RATED ..... H.P.	20	30	40	50	60	80	100	125	150	200	250
DIAMETER OF BOILER ..... inches	30½	36	40	44½	44½	54	54	60	60	66	72
Number of 3-inch Tubes (No. 12 Gauge)	21	30	38	50	50	70	70	88	88	112	134
Length of 3-inch Tubes ..... inches	100	103	114	109	130¾	124	151½	154¼	180	198	204
Number of 4-inch Tubes (No. 10 Gauge)	12	20	22	31	31	49	49	58	58	68	91
Length of 4-inch Tubes ..... inches	49¼	46¼	51¼	46¼	59	52¼	67¾	70½	90¼	96¼	96¼
Thickness Oval Shell ..... inches	11/32	5/16	11/32	3/8	3/8	13/32	13/32	7/16	15/32	7/16	1/2
Thickness Round Shell ..... inches	1/4	1/4	5/16	5/16	5/16	5/16	5/16	3/8	3/8	3/8	3/8
Thickness Oval and Furnace Tube Sheets inches	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Thickness Round Front Tube Sheets ..... inches	7/16	7/16	1/2	1/2	1/2	7/16	7/16	1/2	1/2	1/2	1/2
Length of Grates ..... inches	42	48	54	54	60	60	72	72	78	90	96
Width of Grates ..... inches	30½	36	40	44½	44½	54	54	60	60	66	72
Grate Area ..... sq. feet	8.9	12	15	16.7	18.5	22.5	27	30	32.5	41.2	48
Diameter of Stack ..... inches	18	20	22	24	26	28	30	32	34	38	42
Length of Stack ..... feet	40	44	50	54	60	64	70	74	80	84	100
Heating Surface ..... sq. feet	203	300	400	501	603	813	1000	1250	1500	2002	2514
Length of Boiler over all (approximate) ..... feet	12	12½	13½	13	14¾	14½	16¾	17	19¼	20¾	21¾
Width of Boiler over all (approximate) ..... feet	4½	5	5½	5¾	5¾	6½	6½	7	7	7½	8¾
Height of Boiler over all (approximate) ..... feet	5¾	6	6½	7	7	8¾	8¾	9	9	10	11
Height of Boiler Setting (approximate) ..... feet	7¼	7½	8	8½	8½	10¼	10¼	10½	10½	11½	13
SHIPPING WEIGHT (Approximate)											
Weight of Bare Boiler ..... pounds	10,800	13,000	15,500	18,000	19,900	25,900	28,800	33,100	36,700	44,700	66,000
Weight of Fixtures including Grates ..... pounds	425	750	775	850	875	1,025	1,150	1,250	1,375	2,075	2,700
Total Weight ..... pounds	11,225	13,750	16,275	18,850	20,775	26,925	29,950	34,350	38,075	46,775	68,700

125 Pounds Steam Working Pressure

SIZE NUMBER	140	141	142	143	144	145	146	147	148	150	152
HORSE POWER, as Rated ..... H. P.	20	30	40	50	60	80	100	125	150	200	250
DIAMETER OF BOILER ..... inches	30½	36	40	44½	44½	54	54	60	60	66	72
Number of 3-inch Tubes (No. 12 Gauge)	21	30	38	50	50	70	70	88	88	112	134
Length of 3-inch Tubes ..... inches	100	103	114	109	130¾	124	151½	154¼	180	198	204
Number of 4-inch Tubes (No. 10 Gauge)	12	20	22	31	31	49	49	58	58	68	91
Length of 4-inch Tubes ..... inches	49¼	46¼	51¼	46¼	59	52¼	67¾	70½	90¼	96¼	96¼
Thickness Oval Shell ..... inches	3/8	11/32	11/32	3/8	3/8	15/32	15/32	1/2	1/2	1/2	9/16
Thickness Round Shell ..... inches	1/4	9/32	5/16	5/16	5/16	13/32	13/32	13/32	13/32	7/16	15/32
Thickness Oval and Furnace Tube Sheets.. inches	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	9/16
Thickness Round Front Tube Sheets ..... inches	7/16	7/16	1/2	1/2	1/2	7/16	7/16	1/2	1/2	1/2	1/2
Length of Grates ..... inches	42	48	54	54	60	60	72	72	78	90	96
Width of Grates ..... inches	30½	36	40	44½	44½	54	54	60	60	66	72
Grate Area ..... sq. feet	8.9	12	15	16.7	18.5	22.5	27	30	32.5	41.2	48
Diameter of Stack ..... inches	18	20	22	24	26	28	30	32	34	38	42
Length of Stack ..... feet	40	44	50	54	60	64	70	74	80	84	100
Heating Surface ..... sq. feet	203	300	400	501	603	813	1000	1250	1500	2002	2514
Length of Boiler over all (approximate) ..... feet	12	12½	13½	13	14¾	14½	16¾	17	19¼	20¾	21¾
Width of Boiler over all (approximate) ..... feet	4½	5	5½	5¾	5¾	6½	6½	7	7	7½	8¾
Height of Boiler over all (approximate) ..... feet	5¾	6	6½	7¼	7¼	8¾	8¾	9¼	9¼	10¼	11¼
Height of Boiler Setting (approximate) ..... feet	7¼	7½	8	8¾	8¾	10½	10½	10¾	10¾	11¾	13¼
SHIPPING WEIGHT (Approximate)											
Weight of Bare Boiler ..... pounds	10,900	13,200	15,600	18,100	20,000	27,000	30,100	33,800	37,400	46,100	67,850
Weight of Fixtures including Grates ..... pounds	425	750	775	850	875	1,025	1,150	1,250	1,375	2,075	2,750
Total Weight ..... pounds	11,325	13,950	16,375	18,950	20,875	28,025	31,250	35,050	38,775	48,175	70,600

150 Pounds Steam Working Pressure

SIZE NUMBER	160	161	162	163	164	165	166	167	168	170	172
HORSE POWER, as Rated ..... H.P.	20	30	40	50	60	80	100	125	150	200	250
DIAMETER OF BOILER ..... inches	30½	36	40	44½	44½	54	54	60	60	66	72
Number of 3-inch Tubes (No. 12 Gauge)	21	30	38	50	50	70	70	88	88	112	134
Length of 3-inch Tubes ..... inches	100	103	114	109	130¾	124	151½	154¼	180	198	204
Number of 4-inch Tubes (No. 10 Gauge)	12	20	22	31	31	49	49	58	58	68	91
Length of 4-inch Tubes ..... inches	49¼	46¼	51¼	46¼	59	52¼	67¾	70½	90¼	96¼	96¼
Thickness Oval Shell ..... inches	3/8	3/8	3/8	3/8	3/8	1/2	1/2	17/32	1/2	17/32	19/32
Thickness Round Shell ..... inches	9/32	5/16	11/32	3/8	3/8	15/32	15/32	15/32	15/32	17/32	17/32
Thickness Oval and Furnace Tube Sheets.. inches	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	9/16	9/16	9/16
Thickness Round Front Tube Sheets ..... inches	7/16	7/16	1/2	1/2	1/2	7/16	7/16	1/2	1/2	1/2	9/16
Length of Grates ..... inches	42	48	54	54	60	60	72	72	78	90	96
Width of Grates ..... inches	30½	36	40	44½	44½	54	54	60	60	66	72
Grate Area ..... sq. feet	8.9	12	15	16.7	18.5	22.5	27	30	32.5	41.2	48
Diameter of Stack ..... inches	18	20	22	24	26	28	30	32	34	38	42
Length of Stack ..... feet	40	44	50	54	60	64	70	74	80	84	100
Heating Surface ..... sq. feet	203	300	400	501	603	813	1000	1250	1500	2002	2514
Length of Boiler over all (approximate) ..... feet	12	12½	13½	13	14¾	14½	16¾	17	19¼	20¾	21¾
Width of Boiler over all (approximate) ..... feet	4½	5	5½	5¾	5¾	6½	6½	7	7	7½	8¾
Height of Boiler over all (approximate) ..... feet	5¾	6	6½	7¼	7¼	8¾	8¾	9¼	9¼	10¼	11¼
Height of Boiler Setting (approximate) ..... feet	7¼	7½	8	8¾	8¾	10½	10½	10¾	10¾	11¾	13¼
SHIPPING WEIGHT (Approximate)											
Weight of Bare Boiler ..... pounds	11,000	13,500	15,900	18,400	20,400	27,600	30,800	34,800	38,425	47,925	69,400
Weight of Fixtures including Grates ..... pounds	425	750	775	850	875	1,025	1,150	1,250	1,375	2,075	2,800
Total Weight ..... pounds	11,425	14,250	16,675	19,250	21,275	28,625	31,950	36,050	39,800	50,000	72,200

SALES OFFICES

BALTIMORE, MARYLAND
Hearst Tower Bldg.

BIRMINGHAM, ALABAMA
Box 27, Homewood Station

BOSTON, MASSACHUSETTS
25 Huntington Avenue

BUFFALO, NEW YORK
Ellicott Square

CHICAGO, ILLINOIS
122 South Michigan Avenue

CINCINNATI, OHIO
622 Broadway

CLEVELAND, OHIO
Union Bldg.

CORPUS CHRISTI, TEXAS
Nixon Bldg.

DETROIT, MICHIGAN
17511 Pennington Drive

DULUTH, MINNESOTA
316 Glencoe Bldg.

HOUSTON, TEXAS
900 St. Charles Street

KANSAS CITY, MISSOURI
410 West 5th Street

NEW ORLEANS, LOUISIANA
727 Whitney Bldg.

NEW YORK CITY
Benenson Bldg., 165 Broadway

NORFOLK, VIRGINIA
Commercial Place and Water Street

OKLAHOMA CITY, OKLAHOMA
Liberty Bank Bldg.

PHILADELPHIA, PENNSYLVANIA
908 City Center Bldg.

PITTSBURGH, PENNSYLVANIA
710 Investment Bldg.

PORTLAND, OREGON
112 S. W. Pine Street

SALISBURY, MARYLAND
L. W. Gunby & Company

SAN FRANCISCO, CALIFORNIA
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MEXICO, D. F., Negociacion Tecnica Industrial, S. A.
PHILIPPINE ISLANDS, MANILA, Manila Mach. & Supply Co.
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We Also Manufacture

ERIE CITY UNITYPE PULVERIZER—An impact type, unit pulverizer built in a wide range of sizes for firing boilers, furnaces, lime and cement kilns, etc. Pulverized coal burners and furnace accessories for various types of firing.

ERIE CITY 3-DRUM INCLINED WATER TUBE Boiler (Type A)—A highly efficient steam generating unit for industrial plants and central stations. Designed for high ratings and all types of firing. Built up to 3000 H.P. and 750 lbs. W.P.

ERIE CITY 3-DRUM WATER TUBE BOILER (Type C) for restricted space conditions, is available in a wide range of sizes from 80 H.P. up, as a thoroughly standardized boiler in pressures up to 750 lbs.

ERIE CITY 2-DRUM VERTICAL WATER TUBE Boiler—Built in all commercial sizes and pressures, particularly adapted to waste heat firing.

ERIE CITY HORIZONTAL WATER TUBE BOILER—Is built in all commercial sizes and pressures.

ERIE CITY CROSS DRUM BOILER—Built in all commercial sizes and pressures, particularly adapted to conditions requiring low head room.

SEYMOUR FURNACE FOR PULVERIZED COAL—Water cooled, refractory lined. It permits extremely high boiler ratings and assures high efficiency throughout the combustion range.

ERIE CITY VORTEX FURNACE—A cylindrical refractory lined furnace for horizontal firing with pulverized coal.

HORIZONTAL RETURN TUBULAR BOILERS—25 to 300 H.P. for 100, 125 and 150 lbs. working pressure, both welded and riveted.

VERTICAL FIRE TUBE BOILERS in a wide range of sizes and pressures of 100, 125 and 150 lbs.

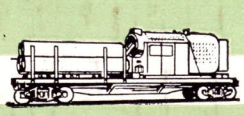
ERIE CITY STEEL HEATING BOILER—Low pressure, electric welded, for steam and hot water heating. Handles all types of fuels.

SHAKING GRATES—Built in a wide range of sizes to accommodate all kinds of solid fuel.

TANKS, SCOWS and fabricated steel construction.

LENTZ POPPET VALVE STEAM ENGINE.

HIGH SPEED STEAM ENGINES.



BOILER, FURNACE AND BRICKWORK COMBINED

SB 4A-6-36-3M